



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety Administration**

July 18, 2016

East Building, PHH-30
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

DOT-SP 14651
(THIRD REVISION)

EXPIRATION DATE: 2018-02-28

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Versum Materials, LLC
Allentown, PA
2. PURPOSE AND LIMITATION:
 - a. This special permit authorizes the transportation in commerce of Silicon tetrafluoride, 2.3 Hazard Zone B, in bundles of manifolded DOT Specification 3A and 3AA cylinders. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein. The most recent revision supersedes all previous revisions.
 - b. The safety analyses performed in the development of this special permit only considered the hazards and risks associated with the transportation in commerce.
 - c. No party status will be granted to this special permit.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.40(e) in that manifolded DOT specification 3A and 3AA cylinders containing materials toxic by inhalation in Hazard Zone B is not authorized, except as provided herein.

5. BASIS: This special permit is based on the application of Air Products and Chemicals, Inc. dated December 27, 2013 submitted in accordance with § 107.109 and additional information submitted by Versum Materials, LLC dated January 4, 2016.
6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identi- fication Number	Packing Group
Silicon tetrafluoride, compressed	2.3	UN1859	N/A Zone B

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packagings prescribed are DOT Specification 3A and 3AA cylinders which meet all requirements of §§ 178.35, and 178.36 or 178.37, as applicable. The cylinders are manifolded together and bundled within a frame that protects the cylinders from damage.

(1) Each cylinder must have a marked service pressure of 2265 psig or higher and a volume not to exceed 50 liters (nominal).

(2) The cylinder bundles must be transported in accordance with the requirements of 49 CFR 178.71(e) except that DOT cylinders shall replace UN cylinders.

(3) The manifold must be designed to withstand at least the test pressure of the cylinder. The maximum stress of the manifolding arrangement at the test pressure shall not exceed 75% of the yield strength of the material.

(4) Two types of drop tests must be performed on a fully assembled bundle onto a concrete surface. One bundle may be used for both tests. The bundle shall

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contain a nominal pressure of 72.5 psig (5 bar) minimum inert gas and the cylinders shall be ballasted (e.g. with water) to represent gross weight. The cylinder valves must be closed as during transport.

(i) Vertical drop. The bundle shall be dropped vertically down onto a corner of the frame from a height of 0.3 feet (0.1m). The angle between the frame base members and the ground shall be a minimum of 5°.

(ii) Rotating drop. The bundle shall be dropped from a height of 3.9 feet (1.2 m) in a rotating manner such that the top hits the ground first.

(iii) The drop test pass criteria are as follows:

(A) The primary frame structure shall not fail such that subsequent movement by fork-lift truck or slinging is not possible;

(B) The cylinders and manifolds shall remain constrained in the frame though deformation of components is acceptable;

(C) The bundle shall not leak (there shall be no continuous leak from any cylinder of the bundle).

b. OPERATIONAL CONTROLS -

(1) Each cylinder must meet all applicable filling requirements in the Hazardous Materials Regulations for the hazardous material.

(2) Each bundle must contain no more than twelve (12) cylinders.

(3) Each completed bundle shall be leak tested at service pressure to check the integrity of all joints and gas connections. This operation may be performed at a filling center during the first fill after assembling as part of the "inspection at time of filling".

(4) The outside of each bundle must be marked "DOT-SP 14651".

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8. SPECIAL PROVISIONS:

a. A person who is not a holder of this special permit who receives a package covered by this special permit may reoffer it for transportation provided no modification or change is made to the package and it is reoffered for transportation in conformance with this special permit and the HMR.

b. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

c. The former grantee, Air Products and Chemicals, Inc., may continue to use the special permit until December 31, 2016.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each motor vehicle used to transport packages covered by this special permit.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
- o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

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No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)—“The Hazardous Materials Safety and Security Reauthorization Act of 2005” (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term “exemption” to “special permit” and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 Immediate notice of certain hazardous materials incidents, and 171.16 Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Material Safety Administration, U.S. Department of Transportation, East Building PHH-30, 1200 New Jersey Avenue, Southeast, Washington, D.C. 20590.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: TG